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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/896,261	06/29/2001	Richard G. Rateick JR.	140-99-005	8033

7590

09/09/2002

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EXAMINER

WILKINS III, HARRY D

ART UNIT

PAPER NUMBER

1742

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DATE MAILED: 09/09/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No.	Applicant(s)	
	09/896,261	RATEICK ET AL.	
	Examiner	Art Unit	
	Harry D Wilkins, III	1742	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-22 is/are pending in the application.  
    4a) Of the above claim(s) 8, 13 and 14 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7, 9-12 and 15-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
    If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. §§ 119 and 120**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
    a) ☐ All    b) ☐ Some    \* c) ☐ None of:  
        1. ☐ Certified copies of the priority documents have been received.  
        2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
        3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
    \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
    a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

**DETAILED ACTION**

***Election/Restrictions***

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
  - I. Claims 1-7, 9-12 and 15-22, drawn to a method of making a wear resistant shoe, classified in class 29, subclass 557.
  - II. Claims 8, 13 and 14, drawn to a wear resistant shoe, classified in class 92, subclass 138.

The inventions are distinct, each from the other because of the following reasons:

2. Inventions I and II are related as process of making and product made. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make other and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case the product can be made by a materially different process, such as the process disclosed by Rateick, Jr in US 5,728,475.
3. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.
4. During a telephone conversation with Larry Palguta on 3 September 2002 a provisional election was made with traverse to prosecute the invention of group I, claims 1-7, 9-12 and 15-22. Affirmation of this election must be made by applicant in replying to this Office action. Claims 8, 13 and 14 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

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5. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

***Claim Rejections - 35 USC § 102***

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 19-22 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Rateick, Jr (US 5,728,475).

Rateick, Jr anticipates the invention as claimed. Rateick, Jr teaches (see col 2, line 39-col 3, line 28) a process that includes machining a piece of hardened rod stock to form a hollow region, followed by heat treatment of that end of the rod stock and finally crimping the periphery of the hollow region about a rounded end of a piston rod.

Regarding claim 20, the process also includes machining of the opposite end to form a cam engaging wear resistant surface (when the rod stock is machined to the general shape of the shoe).

Regarding claim 21, the process also includes a step of hardening the surface of the machined cam engaging surface (when the shoe is treated with a Borofuse coating).

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Regarding claim 22, Rateick, Jr teaches (see col 3, lines 26-28) that the cold working (crimping) causes work hardening of the shoe.

***Claim Rejections - 35 USC § 103***

8. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 1-6, 9-12 and 15-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over "Cold Heading" in view of Rateick, Jr (US 5,728,475).

"Cold Heading" teaches that cold heading is a cold forging process which upsets metal at one end portion of a wire or rod blank in order to form a section of larger cross section than the original.

"Cold Heading" does not teach subsequently cold working the opposite end portion to cause hardening, or that the method manufactures a wear resistant shoe.

Rateick, Jr teaches a wear resistant shoe (see Figure 1) that is made by a process (see col 2, line 14-col 3, line 28) that includes cold working of a non-hardened end to cause work hardening. Therefore, it would have been obvious to one of ordinary skill in the art to have applied the conventional cold working to the opposite end portion of the blank in order to cause work hardening and to make the blank into the wear

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resistant shoe of Rateick, Jr. The work hardening is desirable because it causes an increase in the wear resistance of the shoe.

Regarding claim 2, Rateick, Jr teaches (see col 2, lines 53-54) that the shape of the piston shoe is machined from an alloy. Therefore, it would have been obvious to one of ordinary skill in the art to have applied conventional machining to the opposite end portion in order to form the hollow skirt for receiving a rounded end of a piston rod.

Regarding claim 3, Rateick, Jr teaches (see col 3, lines 21-28) that crimping is used to cold-work the hollow skirt causing work hardening of the shoe while joining the shoe and piston.

Regarding claims 4 and 5, Rateick, Jr teaches (see col 2, lines 53-54) that the shape of the piston shoe is machined from an alloy. Therefore, it would have been obvious to one of ordinary skill in the art to have applied conventional machining to the one end portion in order to form a cam engaging wear resistant surface. It would have been within the expected skill of a routineer in the art to have selected the order in which to carry out the machining and crimping steps.

Regarding claim 6, Rateick, Jr teaches (see col 2, lines 39-56) that the surface of the shoe is hardened by application of a Borofuse coating. Therefore, it would have been obvious to one of ordinary skill in the art to have applied surface hardening to the shoe in order to increase the wear resistance, as taught by Rateick, Jr, of the shoe.

Regarding claim 9, "Cold Heading" does not expressly teach that the process can be applied to a cobalt alloy. Rateick, Jr teaches that the wear resistant shoe is made of work hardening cobalt alloys, which provide sufficient corrosion resistance. Therefore, it

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would have been obvious to one of ordinary skill in the art to have used a cobalt alloy because Rateick, Jr teaches that the cobalt alloys provide work hardening and sufficient corrosion resistance. "Cold Heading" describes that the process is applicable for some nickel alloys. Nickel and cobalt alloys are well known to be similar in properties, even so much that many Ni- or Co-based alloys mention that the base of the material can be either Ni or Co or a combination of the two. Therefore, one of ordinary skill in the art would have has a reasonable expectation of successfully applying cold heading to a cobalt alloy.

Regarding claim 10, "Cold Heading" describes a process which includes cold working of a cylindrical alloy blank into a near final shape.

"Cold Heading" does not describe that the process causes work hardening, nor that machining is applied to achieve final dimensions and then that surface hardening is applied.

Rateick, Jr teaches (see col 2, lines 39-56) a process for making a wear resistant shoe that includes making the shoe from a work hardenable cobalt alloy, machining the blank into the final shape and then applying surface hardening. Therefore, it would have been obvious to one of ordinary skill in the art to have used the cobalt-based alloy, machining and surface hardening as taught by Rateick, Jr because the cobalt-based alloy provides work hardening and sufficient corrosion resistance, the machining achieves the final desired shape and dimensions and the surface hardening provides increased wear resistance.

Regarding claims 11 and 12, Rateick, Jr teaches (see col 2, line 53-col 3, line 28) that the process includes machining a hollow skirt out of the opposited end for receiving a rounded end of a piston rod and the crimping the hollow skirt about the rounded end causing work hardening of the cylindrical member.

Regarding claim 15, cold heading causes an upsetting of the metal. Therefore, "Cold Heading" teaches upsetting one end of the rod stock. Otherwise, see above regarding claims 1-3.

Regarding claims 16 and 18, Rateick, Jr teaches (see col 2, lines 17-24) that the Co-based alloys are work hardenable. Therefore, one of ordinary skill in the art would have expected the cold working, such as upsetting (cold heading) or crimping, to have caused work hardening, as claimed.

Regarding claim 17, Rateick, Jr teaches (see col 2, lines 39-52) that the process of making the shoe includes surface hardening by treatment with a Borofuse coating. Therefore, it would have been obvious to one of ordinary skill in the art to have applied the surface hardening treatment of Rateick, Jr to the wear resistant shoe because the Borofuse coating causes an increase in wear resistance, thus increasing the lifetime of the shoe.

11. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over "Cold Heading" in view of Rateick, Jr (US 5,728,475) as applied to claim 6 above, and further in view of Harada (JP 56-084468).



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The teachings of "Cold Heading" in view of Rateick, Jr are described above in paragraph no. 10. "Cold Heading" in view of Rateick, Jr do not teach that the surface hardening is carried out by application of a TiN material.

Harada teaches (see English abstract) applying a TiN coating onto a Co-based alloy in order to impart excellent wear and corrosion resistance to the alloy.

Therefore, it would have been obvious to one of ordinary skill in the art to have substituted the TiN coating of Harada for the Borofuse coating of Rateick, Jr because the two coatings are functional equivalents, because both provide the increased wear resistance.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Harry D Wilkins, III whose telephone number is 703-305-9927. The examiner can normally be reached on M-Th 6:30am-5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy V King can be reached on 703-308-1146. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

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Harry D Wilkins, III  
Examiner  
Art Unit 1742

hdw

September 3, 2002

  
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